Stephens (H.)

CHOLERA:

AN

ANALYSIS OF ITS EPIDEMIC, ENDEMIC, AND CONTAGIOUS CHARACTER;

WITH ORIGINAL AND PECULIAR VIEWS OF ITS MODE OF PROPAGATION AND THE MEANS OF COUNTERACTING IT.

SHOWING ALSO BY ANALOGY

THAT THE MEANS OF PRESERVING ORGANIZED BODIES FROM DECAY POINT TO THE ONLY TRUE CURATIVE PRINCIPLES IN THE

TREATMENT OF FEVERS GENERALLY,

AND MORE ESPECIALLY

CHOLERA.

BY HENRY STEPHENS,

Member of the Royal College of Surgeons, London; Author of "A Treatise on Obstructed and Inflamed Hernia, and on Mechanical Obstructions of the Bowels."

THIRD EDITION.

LONDON:
HENRY RENSHAW, 356, STRAND.

MDCCCLIV.

C. WHITING, BEAUFORT HOUSE, STRAND.

PREFACE.

During the years 1832 and 1833, I saw and was much engaged in attending patients with Cholera. The many tragic scenes I then witnessed left impressions on my mind which have never been effaced. Two persons died in my house from it: one from the reactionary fever subsequent to a mild attack, she being an aged person, the other from the severest form of collapse, she having neglected the premonitory symptoms. A train of reflections crossed me during the prevalence of the disease, and some portions of the present Treatise were written at that time, but not published.

I have since that seceded from the practice of medicine, and have been engaged in other occupations. The lamentable prevalence of this disease at the present time has brought back my former recollections;

and strongly believing that the principle of treating not only Cholera, but fevers, by antiseptic remedies is the true principle, I am anxious to make known and communicate what I think may be serviceable to the Profession of which I am still a member, and to the cause of relieving human calamities and suffering.

HENRY STEPHENS.

54, Stamford-street, Blackfriars-road, London,
September, 1854.

CHOLERA:

AN ANALYSIS OF ITS EPIDEMIC, ENDEMIC, AND CONTAGIOUS CHARACTER.

"The wings of the pestilence are abroad,
And the shadow of death is around us."

At no period in the history of the world has this picture been more fearfully realised than at the present moment; for while other pestilences have ravaged cities and portions of countries, this fearful disease, which puts at nought quarantines and cordons, ravages almost simultaneously the east and the west, the north and the south; and while the New World is receiving the intelligence of its desolations in the Old, before there is time for preparation, it suddenly appears. Sometimes it lingers in its course, attacking in succession city after city—resembling the march of an invading army, and, amidst the general consternation which it creates, the cry is "What is it?—is it contagious?—is it an epidemic? or is it malaria? and, what is contagion, epidemic, and malaria?—what are they?" We may answer, They are poisons—battalions of death, combating and competing with the productiveness of life—agents in the hand of the Almighty balancing the destructive with the creative influence:—in other words, An epidemic is an invisible something—travelling about—eluding our pursuit—inscrutable to

our investigations—defying our resistance—rendering useless our precautions, and vanishing without our intervention. Contagion, on the contrary, is something more tangible, more capable of demonstration, more within our power and comprehension, and more susceptible of suspension and reproduction by our means. Malariæ, or endemics, are more the disorders of a place than of a season, appearing to depend upon locality, poisoning those who come within their influence, but not often going forth in search of victims. "But," says the inquirer, "these are but the signs and shadows of the pestilence; what is the substance, the essence, the nature of the poison?" "Aye, there's the rub." I answer, What do we know of the thousand agents and elements which surround us but by the results? What is life? What do we know of it but as a result—an effect? What is sight, intellect, sensation, &c.? Can we analyse them and describe their essence? No: and if we could, would they be more subservient to our purpose? We know the elements of the atmosphere; but can we decree that it shall preserve its proportions? We can measure the elasticity of the air; but can we stay the burst of the storm? We may play with the lightning of the laboratory; but we quail as it swoops over us from the heavens. Fortunately for mankind, that which is inscrutable is not requisite to be known; and, on the contrary, that which is necessary can be acquired by investigation. It is sufficient for us to know that these things are the designs, the wisdom, and the power of God, of whom we know nothing but by these proofs of his might, omnipotence, immensity, and power! for

> "Beneath his footsteps the volcanoes rise;
> His shadow is the pestilence; his path
> The comets herald through the crackling skies,
> And planets turn to ashes at his wrath.
> To him War offers daily sacrifice;
> To him Death pays his tribute; life is his
> With all its infinite of agonies,
> And his the spirit of whatever is."

ON THE PECULIAR CHARACTER OF CONTAGIOUS, EPIDEMIC, AND MALARIOUS DISEASES.

Epidemic, contagious, and malarious diseases have each a certain distinctive character—a certain ordinary property prominently marked; but, at the same time, there is a connecting link assimilating and occasionally blending them with one another, in like manner as in the animal and vegetable world there are connecting links between the different species. Thus an epidemic disease will often, in my opinion, for a short period, when raging in situations favourable for it, as in crowded and unwholesome places, develop a decidedly contagious property, which property ceases again for a time, and is again manifested, so that an observer becomes puzzled —being satisfied at one time that it has no contagion, and at another that it has; it will also at times exhibit an endemic character, taking up its abode in particular districts, in low situations, observing the course of rivers, &c. Hence arises a wide discrepancy of opinion. Contagious diseases, as small-pox, measles, scarlet-fevers, &c., will at some period prevail simultaneously over a wide district, having universally a type and character of fatal malignancy which belong not to them under ordinary circumstances; and there can be no doubt there is some epidemic influence, some circumstance at such times, which give to them an additional character of extension and malignancy. Malarious or endemic diseases are ordinarily the diseases of a district, having a local origin and a local habitation, yet occasionally they will assume the march and character of an epidemic; for example, the intermittent fever, or common ague, the inhabitant of a marsh, will at times take up its abode for several seasons in districts where it had not been known for many years, the oldest inhabitant but barely remembering its former visitation, and at such seasons the ague districts are more than usually affected by it; but although usurping in some degree the epidemic character, it never fails to preserve its original endemic tendency; for I observed some years past, when it first visited places and districts where it had been long a stranger, it made its attacks first upon those who were the inhabitants of a water-mill, or who lived in houses near to some river or

low situation. It prevailed in this manner in select situations for many months before it became general, and after then it continued to preserve its predilections. It is this want of integrity in their character, this occasionally diverging property in these diseases, which sets at defiance nosological arrangement; and the medical philosopher who would arrange and classify these diseases—who would set bounds and limits to their respective character, who would denominate them as exclusively belonging to one or the other description, will be mortified at finding his arrangement rendered nugatory by an array of facts subversive of his opinions.

Epidemic, contagious, and malarious diseases, it is clear, belong to a class of maladies having many features in common, although at the same time possessing some imperfect and separate distinctions.

AN EXAMINATION OF THE PROBABLE MODE IN WHICH THE EPIDEMIC, ENDEMIC, AND CONTAGIOUS POISONS ARE INTRODUCED INTO THE SYSTEM.

Without going into the nature of epidemic, contagious, or malarious poisons, or dwelling longer upon the general signs of epidemic, contagious, or malarious disorders, I shall proceed to an analogical reasoning on the manner in which these diseases appear to me to be introduced into the system, and to influence the health and functions of the body.

It will, I think, be readily conceded that the disorders of the health produced by these peculiar diseases, are the effect of a something, whether floating in the atmosphere, exhaled from the earth, or concocted in the elements, or generated in animal bodies, matters not; but that this something is prejudicial to the healthy and vital functions of the human body. We will, therefore, for the sake of a definition, call them Poisons. The next question is, *Are these poisons generally or particularly prejudicial?* Have they a common pestiferous influence, the different effects being produced by one agency, and modified to their different appearances by the different constitutions of the individuals they affect? or, have they an individuality and character of their own, producing, on their introduction to the human body, a chain

of specific effects, constituting one particular and nearly uniform disease? I think I need not argue long to convince my readers that there *is* an individuality in each particular poison, which can produce but one train of affections, alike in kind, however they may differ in degree. The poison of an ague is attended by phenomena distinct in its kind, also small-pox, measles, scarlet fever, hooping-cough, &c.; other diseases, as typhus fever, although without doubt the effect of a *distinct* poison, have yet results which are more in common with other diseases, and are less distinct and peculiar to themselves: for example, most of the effects observable in typhus fevers are met with in most other diseases which terminate in a low and putrid tendency; yet I never heard of a person taking a typhus fever from another dying of small-pox with malignant symptoms. Neither have I ever heard of a person taking typhus fever from a person dying of *scarlatina maligna*, or, on the contrary, small pox or other diseases caught from one labouring under typhus, nor of a person taking typhus from another affected with the reactionary fever supervening on an attack of cholera. The next question is, How are these poisons communicated to the body, and how do they produce their effects? A natural reply will be, that, as these poisons are most probably aërial, the lungs appear the most likely method in which they are introduced into the body; that the organs of respiration are the receptacle, and through them their peculiar effects are disseminated to the different parts of the body. This, I believe, to be the general and the most palpable belief, but if we examine the matter further, we shall find that this manner of accounting for the phenomena is more fanciful or imaginary than real; that it is the result more of a supposition than of a demonstration. It is true the air is, and consequently the poison may be, admitted into the lungs, and apparently into the body; but in the lungs the means of access to the body are not easier than through many other parts. The poison applied to the lungs must be absorbed to affect the body, and I see no reason why it cannot be as readily absorbed from any other surface as that of the lungs. The skin and the alimentary canal afford as ready a surface for absorption. If we examine analogically the effects of

certain agents or poisons which affect the human frame, we shall, I think, be furnished with the clue to the phenomena of infectious diseases. It is a well-known fact, that numerous poisons, particularly animal, are poisonous only to particular parts, or, in other words, that there are particular parts of the body only which are susceptible to the *primary* effects of particular poisons; for example, the epidemic ophthalmia is a poison which affects the eyes only; fever, or other constitutional disturbance attending it, is a secondary effect or consequence, and not primary. The poison of syphilis also affects, in the first instance, by primary sores, the constitutional effects being secondary, as a consequence of the inoculation.

There is one particular disease which I think proves this fact, and by which I think I shall be able to show that many epidemic and contagious diseases are communicated to the system through the medium of one particular organ or part, by a species of combination or inoculation of *that organ*, and that the disease is then further communicated to the body, which becomes affected secondarily, but most influentially; and this disease is Puerpural fever. This peculiar fever attacks females only, and that only at one particular and peculiar time, namely, just after parturition. In all the cases of death, dissection has proved the uterus to be the primary seat of the disease. Its commencement is marked by pain in that region, and tenderness, which rapidly extends, influencing the body by apparently contaminating the circulating fluids. The uterus receives the first contaminating effect, through which the whole body becomes affected. The contagious effects of this disease, it would appear, cannot be communicated to the body but through the medium of the uterus, and that the uterus is only susceptible to its influence when it has been enlarged by pregnancy, and when the vessels of that organ are open from the recent casting off of the fœtal contents, and while its interior is a considerable secreting surface. The greatest susceptibility is immediately after parturition, and this susceptibility diminishes as the parturient state goes off, and as the uterus diminishes in its size, and gets into its natural condition.

The following case, which occurred in my practice, will

illustrate this argument more fully, and will show that the uterus may be, when not impregnated, a means of communicating acute disease or contamination to the body:

A young girl, just about the period of her first menstruation, was seized in the night with a copious and exceedingly fœtid discharge from the uterus, after having had some sensations of uneasiness, such as usually occur at menstruation; there was no apparent illness accompanying this discharge, no pain, and apparently nothing to apprehend. The discharge, while in the uterus, might have produced disease, but being discharged, it would seem to have effected a natural cure. The mother, somewhat surprised and alarmed at the unusual occurrence of such a discharge, sent an account of the case to a medical practitioner at some distance, who was formerly their medical attendant. He expressed some alarm at the case, and thought she ought to be immediately bled, and have leeches applied to the abdomen, for he said it was a case of great danger: he had had two or three such cases, and they had all died. I could not quite understand this opinion, but believed that he had taken a wrong view of the case, owing to some imperfect statement made to him, for I could not see any urgency or danger, the patient appearing quite well; and I still considered if there had been danger, the discharge would remove it, and as there was neither pain nor tenderness, I did not feel justified in bleeding a delicate girl who appeared otherwise well. In the lapse of a few days, decided marks of peritoneal inflammation came on, with great tenderness of the abdomen, great quickness of pulse, &c., &c. I now saw the danger of the case, and that experience had dictated the advice of the former medical attendant, who, I subsequently found, had met with two similar cases before, which had been followed by the death of the patients. My case fortunately terminated otherwise. I bled, fomented, and gave calomel and opium freely until the mouth became sore, and she was salivated, which stopped the progress of the disease, and the patient recovered. My pathological explanation of this case was, that the fœtid matter in the uterus had contaminated that organ, which communicated itself to the peritoneum, producing a form of disease resembling Puerpural fever,

from an original local disease, or a contamination of the uterus.

In further illustration of this fact, that poisons are communicated to the body through other surfaces than the lungs, I may instance the poison of plague, which is communicated by the touch of a person labouring under it; as it is well known that you may stand by a patient labouring under the plague with impunity, breathing the same atmosphere, but simple contact, whether of the clothes or person, is sufficient. The itch is also another instance, where contact with the infected person or infected clothes is sufficient. That poisons are such only when applied in the particular way and to the particular part susceptible to its influence, is proved by numerous instances. Scarlet fever first affects the throat, the earliest symptoms being an ulcerated throat. The poison of serpents, so deadly fatal in its effects upon the blood, by direct contact, may be taken into the stomach with impunity. Not only are poisons peculiar to parts of the body, but poisons are peculiar to particular animals only, as witness the glanders so fatal among horses; but oxen and cows and sheep may be mingled with infected horses with impunity; but the ass is equally as susceptible as the horse. Numerous other instances might be named of these peculiar effects were it necessary. Should it be admitted, which I think cannot be denied, that poisons or infections first affect a part, and then the body secondarily, it will be asked,

HOW, UPON THIS SUPPOSITION, IS THE POISON OF CHOLERA COMMUNICATED TO THE HUMAN BODY?

I answer, through the medium of the intestinal canal.

In the attacks of cholera there is a preceding or primary effect, first produced upon the stomach and bowels. A large proportion of persons are, during the prevalence of cholera, affected with symptoms of indigestion, often in an extraordinary degree, with a frequent disposition to looseness of the bowels. These are the primary though mild effects of the poison; but which, if unchecked, will often increase in degree until the worst stage of the cholera succeeds. Cor-

responding with the views I entertain, these primary effects may, and often do, if I may so express myself, cure themselves, and are readily cured by medicine, and then of course the disease goes no further; but if from neglect, or from certain causes, as irregularity in diet, or from intensity in the amount or quality of the poison received, a greater degree of effect is produced, then are the symptoms more violent, the primary effect upon the bowels is more intense; the poison of cholera is, I imagine, generated along the track of the alimentary canal, which has the effect of inoculating the system more rapidly, or, in other words, of infecting the mass of blood, changing its character, and rendering it too thick to circulate, to secrete, or to carry on any vital functions with which it is connected, presenting in the still living body all the phenomena usually visible only in the dead, namely, extreme coldness of the surface, shrunken and livid appearance of the skin, eyes sunk, skin and nails blue, fingers shrivelled, cold flabby appearance of the tongue, and in addition to these, in the living body, is coldness of the breath, with a total suspension of all the secretions, among which, that of the urine is most remarkable. In ordinary cases of death, in the last act of life, the tide of the blood recedes, stagnates, and coagulates in the body; the solid parts depending for their fulness upon the blood which is flowing into them, shrink and wither as it recedes; and in the collapse of cholera, the same effects take place, the blood recedes from the surface, it thickens and stagnates, and the same shrinking of the body occurs (but more rapidly), only in the one case there is *actual death*, and in the other the phenomena of death exist, while the body still lives.

As an additional proof of the correctness of the foregoing conclusions, the mode of preventing the development of the worst forms of this disease, corresponds exactly with the mode of preventing the secondary effects of many other poisons.

The constitutional effects arising from the stings and bites of poisonous animals and insects is prevented by curing the primary and local symptoms. Applications to a bite or sting, which remove or neutralise the poison, prevent the secondary or succeeding disease; and so in cholera, by curing

the diarrhœa, which precedes the worst symptoms, the further and fatal effects are arrested. By disturbing or preventing the primary effects after inoculation of any disease communicating in that way, the subsequent effects or disease is prevented. Excising, cauterising, or any method or plan by which the local effects can be destroyed before the poison can be absorbed, prevents the development of further action. In like manner, when you cure the primary effects of the poison of cholera, the further progress is arrested.

Before going into the subject of the means of curing the primary effects, I will ask

THROUGH WHAT MEDIUM DO CONTAGIOUS AND MALARIOUS DISEASES PRODUCE THEIR DESTRUCTIVE EFFECTS UPON ANIMAL HEALTH AND LIFE ?

I answer confidently, through the medium of the blood. Although, as I have stated before, the first effects of many of these poisons is to produce a local effect, which generates further poison to infect the system, in the same manner as small-pox inoculation, vaccination, syphilis, &c., all of which produce first a local sore, and generation of further virus, which, being absorbed into the blood, contaminates it, and produces the subsequent disease.

It is on the supposition that the poison in the bite of serpents is received into the blood, and, circulating, contaminates the whole mass, that the remedy of applying a ligature between the bitten part (when the bite is in the hand, arm, or leg) and the body is adopted, and the part sucked to extract the poison, which I am told has the desired effect, and if the blood can be contaminated in one way, why may it not in another?* and why this *rationale* of diseased action, this importance of the blood as a medium of communicating disease, has been so long laid aside, and so little noticed, it would be difficult to imagine.†

* I know, by experience, that the surest way to prevent the stings of bees, wasps, &c., from taking effect, is to suck the part immediately.

† The importance of the blood as a medium through which dis-

In a similar manner as the poison of reptiles and other poisons contaminate the blood, and produce a rapid and simultaneous effect upon the whole body, so also in my belief does the poison of cholera act, with the exception that it usually produces a primary effect upon the stomach and intestines, which parts becoming themselves infected with a diseased action, generate further poison, which is taken into the blood, contaminating and probably destroying in part, and sometimes wholly, its vitality.*

The state the body presents, on dissection, is shown in the following quotation of a report of cases dissected :

"The liver and vessels which pass to the *vena cava* inferior, *were turgid with blood. This turgescence* extended to the *vena cava* superior, to the right side of the heart, and, in some instances, to the left ventricle. Blood was in the same manner stagnant in the lungs, making a congestion of the whole venous circulation of the larger vessels. The blood in the vessels (arteries as well as veins) was unusually *black, resembling tar in colour and consistence.* It is worthy of remark, that this *local accumulation of blood* was uniformly found in all fatal cases, *whether they were of rapid or slower termination,* and was particularly evident, as might be expected, in those in which the oppression of breathing had prevailed with most violence."

Consider these appearances when dead, with the phenomena presented to the eye in the stage of collapse, when the circulation is gone, the body cold and shrunk, and all the phenomena of a corpse presented, except the remains of consciousness and motion—and what so likely to produce so suddenly those united characteristic appearances as the supposition of a poison infecting the blood, changing its character, depriving it of its vitality, if not wholly, in great

eases affect the system, occasionally creeps out in medical writings; but these views have too often been smothered amidst abstruse theories about nervous plexuses, local inflammations, &c.

* According to reports of cases, it does appear that the premonitory symptoms or primary effect upon the stomach and bowels do not invariably occur, and when there is an intensity of the poisonous influence, the effect upon the blood may be simultaneous with the effect upon the stomach and intestines, or follow so quickly as to appear simultaneous.

part, turning it into a thick black mass, like tar, and thus suspending all the living functions depending upon it, by rendering that fluid incapable of circulating? That there is a suspension of the circulation of blood the living symptoms show—that the blood is so changed as to be incapable of moving along the vessels, is shown not only in the living, but in the dead body—that such changes of the blood must necessarily lead to a rapid extinction of life, is, I think, clear, and I cannot conceive of any other system of pathology which can account for these overwhelming, general and rapid effects, as the corruption and death of the circulating fluids, which, permeating to all parts, influences all, the healthy condition of which is essential to the well-being of the living body, the corruption of which carries its poisonous influence to every structure: this alone can account for that universal influence which is felt in diseases like Cholera and fevers, when dissection discovers no cause or alteration of structure in the solids, but, as in fevers, points to the corruption of the fluids and secretions, and traces their source in the contaminated blood, and in Cholera shows in the annihilation of all secretions, the incapacity and impossibility of this expired or expiring blood to carry on any functions.

I will here just state what is the prevailing notion amongst medical men with regard to the thickness and black appearance of the blood in Cholera. "It is caused," they say, "by the serum of the blood draining away during the primary effects of the disease, by which nothing but the thick or coagulated parts are left." This explanation is so plausible that I do not wonder that it has been so universally received; but this cannot be reconciled with the fact that, *in those cases where there has been little or no previous looseness, the same thickness and dark appearance of the blood, and shrunk appearance of every part, takes place equally as when copious looseness has prevailed.*

Under the supposition that I may be correct in my opinion —1st. That the poison of Cholera is introduced into the body through the medium of the intestinal canal—that it then produces a local effect upon the intestines—that from this local disease the blood becomes contaminated, corrupted,

and deprived eventually of its vitality, from which ensues the train of fatal effects;—upon this supposition being correct, it may be asked

ARE THERE ANY MEANS WHICH WILL PRESERVE THE BLOOD FROM THESE CONTAMINATING INFLUENCES, OR WHICH WILL RENDER IT LESS SUSCEPTIBLE TO THE EFFECT OF THESE POISONS?

My opinion is, that the remedy, if any, will be found in those drugs or means which have the power of preserving dead animal or vegetable substances from decomposition or decay.*

* The connexion between the causes which produce putrefaction and decomposition of dead organised matter, and those which produce or excite the action of Cholera and fever in the living, is exemplified strongly in the following case, copied from the newspapers:

"SHOCKING CASE.—On Friday morning an inquest was held before Mr. W. Baker, at the Town of Ramsgate public-house, High Street, Wapping, on view of the body of Samuel Coveney, aged twenty-three years, who died from Cholera on board the barge *Sarah*, under the following very shocking circumstances:—Sarah Coveney, the widow of the deceased, said her husband was master of the barge *Sarah*, and was in the employ of Mr. Cox, a lighterman, at Lambeth. For some time past the barge had been used to remove all kinds of dust, ashes, sweepings from streets, and vegetable matter, from Mr. Gower's wharf, Blackfriars, the city contractor, to Raynham, in Essex, to be sifted, in consequence of its not being allowed to be done in London. About a week since the barge was loaded, and the deceased navigated the barge down the river. Witness and deceased were the only persons on board. They were unable to sleep in the berth in consequence of it being so close and confined, and the smell arising from the cargo was so dreadful, that they were obliged to sleep upon the locker for the purpose of obtaining fresh air. If a candle was lighted in the cabin, it would be directly extinguished by the foul air, and they were unable to keep the fire alight. Everything they had on board changed colour, *and if the meat and provisions only remained in the barge an hour they would become tainted*, and witness was compelled to throw them overboard. Witness was very ill when she first went on board, but had since recovered. The cargo was safely landed at Raynham, and the barge was anchored in the river, opposite Erith. On Tuesday night, about ten o'clock, the deceased, who had never had a day's illness in his life, was suddenly attacked with Cholera. Witness had no one

My reasons for this belief I will now proceed to explain: Animal or vegetable substances, when life is extinct, are immediately susceptible to influences which tend to decompose or reduce them to their natural elements, but *there are Agents* which will arrest this tendency to natural decay, and preserve the body or substance from decomposition for various periods of time, as is witnessed in the embalming of bodies, in preserving specimens of natural history, timber, provisions, &c. Now, if we ask,

WHAT ARE THE DRUGS AND MEANS USED?

We shall find that they fall under the class of what may be called *Antiseptics*, which word is derived from the Greek *αντι against*, and *σεπω to putrefy*, having a tendency to prevent animal substances from passing into a state of putrefaction, and of obviating putrefaction when already begun, and I confidently affirm that the beneficial effects found in this class of agents over many diseases, will be found in these antiseptic qualities.

The well-known effects of some of the salts of mercury in preserving animal and vegetable substances from decay, as in the example of the process of kyanizing wood, would, upon this principle or theory, lead to their being employed in curing and counteracting disease. And what are the facts? Why, of all the agents ever discovered by man, mercury is more universally relied on in the cure of disease than any other drug whatever. It had long been used in diseases of the skin before it was employed internally—it was soon found to be the chief and almost only remedy for the cure of syphilis, which is an animal poison. In the liver

on board to assist her, nor even had she any pure water to give to the deceased, who frequently complained of thirst. Witness had no candle, and the nearest house was about three miles from the place. Witness assisted the deceased on deck, and they both remained together until five o'clock in the morning, when the deceased died. She could not obtain any help until some time afterwards, when two young men came on board, and navigated the barge up to Wapping, and the body of the deceased was conveyed to the dead-house. The jury returned a verdict of 'Death from Asiatic Cholera,' and recommended the Coroner to write to the Board of Health, and inspect those barges laden with unsifted dust, &c., before they were navigated by lightermen. The Coroner said he would do so."

disease, to which Europeans are so liable in the East Indies, it was found to be the only certain remedy; and for a long time it was considered to have some specific and peculiar action over this disease. The large doses used by our Indian practitioners led to a more bold practice with it in this country, and by these means its great power over almost all varieties of disease began to be developed; and, notwithstanding the prejudices excited against it, as against all useful agents, this powerful remedy is, with all practitioners of experience, the right hand of medicine. In typhus fever, what said the late Dr. Armstrong? "For a long time I overlooked one of the principal effects of calomel in congestive fevers, and at last it was only forced upon me, by patients *almost invariably recovering with rapidity* where salivation was excited;" and my own experience confirms this fully; and indeed it was my practice, in all cases of fever, where I had apprehensions of the result, never to waste my time over useless drugs, or ponder over still more useless theories, but to steer at once for this haven of safety, and all other means used by me were to facilitate and promote this desirable end.* If I bled a patient in fever, it was not because I expected any beneficial results from bleeding alone, but because it would facilitate the action of mercury; the same with purging and warm bathing, which promoted the action of mercury upon the mouth. This once obtained, I knew my patient to be safe. Let it be understood, the decided effects of mercury are not observed in acute diseases *until the mouth is affected.* The effects observed by Armstrong over typhus is also found to be as uniform over other fevers. The yellow fever, in like manner, leaves the patients whenever the mouth becomes fully affected, or the patient fully salivated.

Mr. O. Halloran, who visited Spain during the dreadful epidemic (yellow fever) of 1820, says: "In the majority of instances, the patients treated in the manner described will be under the influence of mercury on the third day, after

* The exceptions to this are in treating the fevers of children, where I have found it necessary to be more cautious than in adult cases, as the effects of mercury on the mouth in them are not so controllable.

which their recovery is *certain and rapid.* They will generally walk about on the seventh day." He also states, "that *without a single exception* throughout the whole period of the epidemic, every patient in whom salivation could be induced, recovered."—See *Medico Chirurgical Review*, vol. ii., March, 1822.

It is well know that small-pox virus if mixed with a small portion of mercurial ointment, will take no effect. The powers of mercury over disease became, as I said before, gradually developed. Not only fevers were found to be cured by it, but inflammatory disorders of all kinds were found to yield to its effects.

I have seen one of the worst cases of phrenitis, or brain fever, I ever beheld, disappear at once on the occurrence of salivation; and it is my belief that if a person was exposed to the contagion of small-pox, and immediately put under a course of mercury and the salivation excited, that the disease would be either wholly prevented or much mitigated in its course. Indeed, I do not believe it possible to produce small-pox in a patient labouring under the full effects of mercury.

But acute diseases were not the only diseases benefited by mercury; chronic diseases of almost all kinds were found to yield to its influence. Were I to enumerate them, I should fill a catalogue. Mr. Scott, of Bromley, who obtained such deserved reputation for curing diseases of the joints (white swelling), effected his cures by the slow action of mercury in the form of plaister to the part. Chronic diseases of the eyes I have seen yield to mercury after resisting every other remedy; but I need not dwell further on its effects, so well known amongst medical men generally, although I am aware there are many still sceptical of these effects, and they will probably always remain so, as not relying on it they will never use it effectually.

In Cholera, the effects of calomel over it is amply testified to by the medical practitioners of our East Indian possessions, who were long familiar with it before it appeared in Europe.

In reports from the Medical Board of Bombay, which I extract from a work before me, published in 1832, by John V. Thompson, Esq., Deputy Inspector of Hospitals, it is

said, "The practice of this place (Bombay), as sufficiently appears from Dr. Taylor's Report, bears ample testimony to the control which calomel possesses over this disease."

I may here briefly advert to my own experience of the effects of calomel over Cholera.

In the year 1832, in the district assigned to me in Christ Church, Surrey, the first case of Cholera occurred. The patient was a young girl about seventeen or eighteen years of age. She had the rice-water evacuations, extinction of the pulse at the wrist, sunken appearance of the eyes, and total suppression of urine; symptoms which are indicative of the stage of collapse, but the pulse was perceptible in the brachial artery, and the heart could be felt to pulsate. My mind having been made up, before the appearance of cholera, as to the treatment I should pursue, which was to produce, if possible, salivation, I at once gave the girl twenty grains of calomel with one grain of opium, and followed it by ten grains every two and three hours, and the result was salivation and complete recovery. The amendment was palpable on the appearance of the mercurial effect, the secretion of urine returned as soon as salivation took place. Encouraged by this case I tried it in several other cases of collapse, but, alas! I soon found that when the collapse *was complete* I had to deal as with a dead body. When the blood is stagnant all over the system, when every secretion is suspended, absorption must likewise be at an end; and, consequently, what remedy can affect a body dead to every external influence? I found it fail, as did every other remedy in these cases; but, in cases less violent, and where the vital functions were less completely suspended, my faith in it was more than confirmed. The following case will still further illustrate it:

A man was seized with Cholera, and taken to our parish cholera hospital. He became my patient, and I soon saw that though his was a case of decided collapse, that it was less complete than in many which I had seen, and I immediately put in practice the same treatment as above detailed, and with the same decided effect: the mouth became sore and the symptoms receded, and it was most gratifying to me to witness the joy and gratitude of the man and of his wife who came to see him. Believing that the mercury was in

the ascendant and the man safe, I unfortunately consented to his abandoning the calomel, as he had taken a considerable quantity, which, as it had begun to affect his mouth, I thought might continue to operate, and would, perhaps, salivate him severely.* On calling upon him in the evening I found the mercurial effect apparently going, and I had a vague feeling that he did not seem so well, although there were no symptoms immediately alarming. On calling in the morning I found, to my great sorrow and mortification, that the system of collapse, or worst form of Cholera, had reappeared, and with so much intensity as to preclude all hope of recovery. *The effect of the mercury had wholly disappeared.* Soon after his wife came in. She had been led to consider him as safe, and it may be easily conceived what were her feelings on seeing this end to all her hopes. The man, retaining perfect consciousness, looked wistfully towards her, and shook his head mournfully and despairingly. I need not dwell on this piteous case—he died!

Into the effects of mercury over diseases I shall not go further, but proceed to notice other drugs which have an antiseptic tendency over dead bodies, and have also a curative effect upon the living.†

* Further experience satisfied me that there is little dread of the effects of mercury being excessive when used for such acute diseases; the chief hazard is, that a mild effect of mercury will be superseded and overcome by the antagonistic powers of the disease.

† Many medical men are timid in the use of mercury from some undefinable dread of its future ill effects. I know of no effects of mercury as a medicine that are not immediate, and they are generally trifling, and soon recovered from. Our East Indian practitioners, who have used it to a much larger extent than Europeans, see none of these evils, and deny it altogether. I can add my testimony to theirs by saying, that except the soreness of the mouth and some symptoms of irritation and disagreement occasionally exhibited, and which are transient, and seem to indicate that at this particular time it disagrees and should be discontinued, I have seen no permanent *serious* effect from its use in adult subjects. The mistake which professional men labour under is in attributing the effects resulting from the disease (syphilis) which mercury was first used for, to the drug itself; whereas this mercurial disease, as it was falsely called, was in reality (syphilis) unextinguished and reappearing, from the remedy not having been continued long enough. The peculiar symptoms falsely described as resulting from the use of mercury

The power of arsenic in preserving animal substances from decay, is well known; internally, it has not been used to the same extent as mercury, and therefore its powers have not been so fully tested. In diseases of the skin it has been found a valuable agent. In the ague it was long used as a quack medicine, under the name of *tasteless ague drops.* Some of the barks of wood are used in the arts for preventing the decay of animal substances as exemplified under the process of tanning. The Peruvian bark and its salt, quinine, is the most certain agent over the ague or intermittent fever, and it is also preservative of dead animal matter. During the prevalence of the plague, the neighbourhood of tan-pits and tan-yards were found to be comparatively exempt from this disease. The dealers in pitch and tar, as also in tobacco, were found generally to escape it.*

I shall pass over many of the minor antiseptics, and come at once to one of the most simple but powerful preservatives against putrefaction or decomposition of all known substances, namely, *kreosote.* Its effects in preserving animal or vegetable substances from decay, I have tested in a variety of ways. Vegetable infusions will never mould if they contain only a small portion of kreosote. I have preserved blood for years, by mixing it with the crude oil from Stockholm tar, which contains kreosote, and is the chief agent in its preservation.

It destroys almost instantly the fœtor from animal fæces and other secretions. It almost immediately coagulates egg-albumen and serum. Meat and fish are preserved if kreosote is brushed over them. The preservative effects of tar and wood smoke are owing to the kreosote.

I have a strong belief that this powerful antiseptic will be found amongst the most efficient means of neutralising and counteracting the effects of contagious, malarious, and epidemic diseases. If you can sufficiently impregnate the system with it, I expect its preservative effect upon the blood would counteract and prevent these diseases from com-

are never seen when mercury is used for the cure of other diseases, although more extensively used. This fact ought to have long since removed the prejudice against this invaluable agent over disease.

* These are all remedies in cutaneous diseases and antiseptics.

municating themselves to a body so influenced. I do not think it unreasonable to suppose that an agent, which is so powerful in preventing the natural decomposition of those substances which compose the animal fabrics, should exert a powerful effect in preventing the deteriorating agency of those influences, which produce decomposing changes in animal bodies. Should this prove to be the case, there will be developed a principle in the action of remedies of the greatest practical value.

The following are among the drugs or agents which have a strong antiseptic tendency:—Kreosote, mercury, arsenic, nitrate of silver, alum, carbon, the salts of copper and iron, pyroligneous acid or wood vinegar* (containing kreosote, to which it probably owes its effect); the barks of wood (particularly cinchona), alcohol, naphtha, and essential oils, these all coagulate albumen, &c. Wood vinegar appears from the statements of Pliny to have been amongst the most essential of the means used by the ancient Egyptians in preparing their mummies.

Before going into the subject of the uses or the mode of application of any of the above antiseptics, I will proceed to give my reasons for thinking the Cholera

A CONTAGIOUS DISEASE.

In almost all the controversies which I have read, the question seems to have been, simply, "Is it an epidemic or contagious disease? and the writer who advocates that it is not contagious, finds out instances where the disease has arisen without any contact or communication with infected persons, and exhibits these as proofs that it is not contagious. The question, whether a disease may not be *both* epidemic and contagious, seems never to have entered into his imagination. The disease must in his idea be either contagious or epidemic, and as its epidemic tendency is widely established, the proofs are of course numerous; and if it must be either one or the other, he decides that it must be epidemic, and *therefore cannot be contagious*. Typhus fever is both epidemic

* The crude pyroligneous acid is preferable to that which has been purified, as it abounds more in kreosote.

and endemic, and yet I conceive there are not many now who will deny that it is occasionally contagious. My reasons for believing Cholera to be very often contagious, are the following:

1st. In its course from one country to another, it is observed to travel along the most frequented roads of human intercourse.—2ndly. That if a person who has been exposed to the influence of Cholera, and has had premonitory symptoms, should be removed to a spot where the disease has never prevailed, and becomes worse and subsequently dies, others, and those attendant upon him, often become the subject of it, and in this way the disease has often originated in a locality previously free from it. In the present outbreak of Cholera, several instances occurred where it commenced on board ships coming from Hamburgh (where it prevailed) to ports in this country; and some of the crew after coming on shore were affected and died, and immediately the disease commenced amongst those who were in direct attendance upon them, and thus it was disseminated. When the disease broke out in the pauper establishment at Tooting, many of the parishes removed their children to their own unions; several of these children became affected with the disease and died, and it spread immediately in these hitherto healthy quarters.

In the year 1832 or 1833, a gentleman was proceeding from London to St. Albans to a dinner-party. He had slight diarrhœa when he left London, which increased on his journey, so that, as his groom stated, he was compelled to stop several times on the road. He dined, and after dinner was suddenly seized with cramp and all the symptoms of the worst form of the disease. In the extremity of this sudden attack, the housekeeper was called to be his nurse and attendant. He died: he had scarcely been buried before the housekeeper was seized; she also died; and in a very short space her husband, who was butler or steward in the establishment, was attacked and died. No other cases of malignant cholera occurred at St. Albans. I think it can scarcely be denied that this is strong in proof of contagion.

Because persons in attendance upon cases of cholera often escape, this is considered proof of its being non-contagious.

It is well known that some persons are not susceptible of the disease, and most likely those persons who are in attendance on these cases are more than usually on their guard, and take precautions on the slightest appearance or symptom; but, notwithstanding, they do often die of it. Let me not be misunderstood; I do not affirm that Cholera is *always* contagious, but that under its severest forms it often develops a contagious property.

The following extract from a letter of Captain Sykes to Dr. Milne, communicated by Sir Gilbert Blane, and dated Punderpoor, 15th August, 1818, appears to be strong evidence. He says, "In my light company there were three or four men taken ill at once; of course there were attendants from the same company upon these men. The disease went on increasing in that company, and there have been more cases of cholera in it than in any other." Also a Dr. Duncan states that "while the 34th Regiment were on the route from Bellore to Bangalore, Cholera appeared amongst them, and every intermediate town through which they passed betrayed symptoms of the infection soon after their departure." There are instances also of troops previously healthy passing through infected places, taking the disease, and being afterwards joined on their march by healthy regiments, who also became affected soon after they joined the infected regiment.*

The contagious nature of this disease is, I believe, often denied, not from conviction, but from an amiable feeling of preventing alarm: I have never known any good from concealing truths. To know that a disease is sometimes contagious, and to be well prepared to counteract its effects, is better than to be lulled into a false security, and thus to become an easier prey.

Although contending for the principle that Cholera exhi-

* No policy can be worse than that of congregating human beings together in times of Cholera. Individual cases often occur and spread no further; but when the disease breaks out in barracks, hospitals, gaols, &c., there usually follows a number of victims. In the 62nd Regiment, stationed at Devonport, one of the men died at his own house, and in consequence an order was issued calling all the married men into the barracks. The disease quickly broke out amongst them, and many died. This occurred only recently.

bits a contagious as well as an epidemic and endemic property, yet we must not lose sight of the fact, that it originates independently of contagion, although the latter may and often is one of its means of extension. Rivers, marshes, ditches, effluvia of decaying matter, attract, or probably under some peculiar modification of meteoric, atmospheric, or electric condition originate separately and independently the poison of this disease. How it is produced we know not; but we do know the fact that it is in those situations it commits its greatest ravages; pointing out to the observer the necessity of draining and cleansing. Where the locality is such that miasma cannot be removed, then persons should retire to healthier spots; but as in many instances this cannot be done, means should be taken to close up drains and cesspools, by some ready and economical contrivance such as the following:—Place some planks over the drain or cesspool, and cover them with layers of straw or other appropriate covering, over this spread puddled clay, which being impervious to water, would be so to the effluvia arising from it. As an adjunct to sanitary measures I strongly recommend this, or some such means, as I think it preferable to cleaning out ditches, cesspools, &c., at times when Cholera is prevailing; for many have fallen victims to this disease whose attack may be traced to this unwholesome employment; and besides, I question if the stirring up a stagnant ditch or pool in Cholera times is not more dangerous than letting it remain.

There may be, and undoubtedly often are, cases in which it would be impracticable to cover up a drain or cesspool in the way I have described. In such cases, and indeed in all cases of ditches, &c., from which bad smells emanate, the following cheap and simple expedient would be an excellent adjunct to other measures:—Pour into the ditch, drain, or cesspool, some Stockholm tar—(or a cheaper product may be obtained, and which is equally, if not more effectual; namely, the tar obtained from the destructive distillation of wood in the process of manufacturing pyroligneous acid). There is also the oil of tar, which is also a cheap product, and is probably more convenient for the purpose. By pouring either of these substances into the ditch, drain, or cesspool, the

surface will be covered with a floating film, which will prevent noxious exhalations, and by its strong antiseptic property, being impregnated with kreosote, will arrest the progress of decomposition.*

Charcoal has been long known for its property of purifying fœtid water, and rendering it fit for various uses. Fresh burnt charcoal has the property of absorbing several gases. I should, therefore, recommend it to be thrown into cesspools, &c. Common salt and alum are more or less antiseptic in their properties, and may be thrown into cesspools, &c. The nitric or muriatic acid may be in some cases poured in. Dry chloride of lime might be placed in some convenient vessel within a drain, or in a float upon the surface, and some sulphuric acid poured over it; this would soon evolve considerable quantities of chlorine gas, which in this way would diffuse itself along the drains, &c. In such case the drain should be a covered one, as this gas, if generated too largely, is of a suffocating character. In my opinion, the expedient of pouring in tar, or oil of tar, as above described, will be the most permanent and effectual preventive of contamination from these sources.

I will now advert to

THE MEANS MOST LIKELY TO COUNTERACT, NEUTRALIZE, AND PREVENT THE DEVELOPMENT OF THIS POISONOUS AGENCY IN THOSE EXPOSED TO ITS INFLUENCE?

To arrive at something like a satisfactory conclusion to

* The following communication from an elderly person has been related to me, and as it confirms my belief in the efficacy of kreosote and of those compounds which contain it, I will here relate it. In a conversation about Cholera, this person said, "If you would only burn some tar in the house, there would be no danger of Cholera, or fever, or plague of any kind." Upon questioning her as to the source of her information, she stated, that when she was very young, she remembered an old soldier relating, that when he was with his regiment in the West Indies, the progress of the yellow fever was stopped by burning tar mixed with brimstone; and that this composition (tar and brimstone) was regularly served out to the men every day for the purposes of fumigation. As this occurred probably three-quarters of a century since, it has most likely been lost sight of. Burning torches in time of plague is a very old practice.

this question, we must reason somewhat upon the properties which this poison exhibits.

1st. This poison is found to prevail wherever there are bad smells, damp, watery exhalations, &c. Now we find that wherever these circumstances prevail hydrogen is somehow or other connected with it. Hydrogen is the medium through which smells are communicated; almost all bad smells are some combination with hydrogen, and the effects of some of the combinations of hydrogen resemble, in some degree, the effects of Cholera.

"Hydro-sulphuret of ammonia acts powerfully on the living system. It induces vertigo, drowsiness, nausea, and vomiting, and lessens the action of the heart and arteries." (*Vide* Duncan's *Edinburgh Dispensary.*) It will be perceived that these effects resemble (differing only in degree) some of the effects of Cholera, and it is not unreasonable to suppose that the poison of Cholera, whatever it may be, has a property of combining with hydrogen; hence its predilection for those situations where hydrogen abounds, and hence may be inferred the value of those means which have the effect of decomposing hydrogen.

Sulphuretted hydrogen is very deleterious even when largely diluted with atmospheric air. According to the statement of Dupuytrin and Thomand, a small bird died immediately in air containing only 1500th of sulphuretted hydrogen; one 800th killed a middle-sized dog, and a horse perished in an atmosphere containing one 150th. It is well known to abound in foul sewers. It cannot, therefore, be doubted that it is intimately connected with the poison of Cholera, either by the property of combining with or attracting it.

It is, therefore, no more than reasonable to infer that agents which have the power of decomposing hydrogen, should be most powerful in counteracting the effects of epidemic miasma; poisons which show their predilections for situations where hydrogen and its compounds abound.* Chlorine, iodine, and bromine instantly decompose sulphu-

* The hydrogenous compounds would seem to be most injurious when in combination with vapour. Thus, in a moist atmosphere, they are more injurious than in a dry one.

retted hydrogen. Nitric acid also decomposes it and precipitates the sulphur.* I should, therefore, recommend that these agents should be diffused in the form of vapour in houses, apartments, and neighbourhoods where Cholera prevails. Some of these remedies are of easy application.

NITRIC ACID VAPOUR—THE MODE OF USING IT.

Put a quantity of sand into a pipkin, and heat it by placing it on the fire, and stirring it, then put half an ounce of saltpetre into a teacup or gallipot, and pour over it two drachms of sulphuric acid, and set it in the pipkin of heated sand. The fumes of nitric acid vapour will immediately begin to rise. If the apartment is large, or there are many rooms, several pipkins may be used in this manner. If the vapour inconveniences much, the windows and doors may be opened to ventilate. This vapour is not injurious or deleterious to life, and may be diffused without occasioning any material inconvenience.

I believe it will be found that in chemical manufactories where nitric acid is made or extensively used, as in oxalic acid manufactories, that the workmen seldom, or if I am rightly informed, are never the victims of Cholera. It would be a most valuable object, and one to which the attention of sanitary commissions should be directed, namely, to ascertain what occupations, and what peculiar manufactures procure an immunity to the workmen against this disease. May not the comparative freedom of the town of Birmingham from this disease be owing to the nitric acid so extensively used in dissolving and refining metals, and to the quantity of nitric acid manufactured there?

Chlorine gas, from its property of combining with hydrogen and altering its character, is a powerful disinfecting

* The power of concentrating nitric acid as a decomposing agent and solvent of organised matter, would astonish the spectator who, for the first time, witnessed it. Were a human being to fall into a vessel of concentrated nitric acid, so as to be covered, he would be gradually dissolved—clothes and everything would disappear, with trifling exceptions, and the new compound formed might be poured as a liquid from one vessel into another. Human fæces are instantly dissolved in it, and all fœtor as instantly destroyed.

agent, and has been much recommended.* The most convenient way of using this, in my opinion, is, to take a small quantity of the powdered chloride of lime, and pouring on to it some crude pyroligneous acid, which combines with the lime, and liberates the chlorine in the form of gas; but as this gas is too powerful to be used largely, small quantities should be used, and frequently repeated. I prefer using the pyroligneous acid to the sulphuric, as the object should be not to diffuse suddenly a large quantity of chlorine gas, which might produce inconvenience or injury, but rather to effect a slow disengagement—this the pyroligneous acid does.

The above gases have a chemical decomposing action upon hydrogen and its compounds, and therefore may be considered in the light of purifiers and disinfectors.

I shall now pass to the consideration of those agents which do not act by decomposing the products of decomposition, but which exert their power in arresting and preventing decomposition altogether; and these I would consider more in the light of agents which act, not by decomposing the poison, but by preventing its effecting those changes in the vital functions which lead to the development of disease; such I consider to be the action of antiseptics.

I will not prolong this treatise by entering into a lengthened detail of the mode of using all the varieties of antiseptics, but will simply detail the plan I should pursue in cases where I apprehend the diseases might occur, or when symptoms threatening it took place.

If I were exposed to the influence of the poison of Cholera, by dwelling in crowded and unwholesome places

* The disinfecting power of chlorine is usefully exemplified by the following experiment. A piece of meat, tainted and unfit for culinary purposes, may be restored, and rendered perfectly sweet and fit for food by the following process:—Put the meat into a saucepan along with some dry chloride of lime, and pour water in to cover it; place it over the fire until it simmers, then take it out and rinse it well in water containing salt. The chlorine gas will have destroyed the smell, and the heat will have driven off most of the gas; that which remains will be taken out by the salt and water, and when boiled afterwards it will be good to eat. A portion of its flavour may be lost, but the difference will be very slight.

where it prevailed much, or was in the habit of attending Cholera patients, I should watch particularly all disturbance of the bowels and digestive organs. The bowels being, as I believe, the medium through which this poison communicates with the body, I should endeavour to stop all looseness as soon as it appeared, believing that this looseness is either the primary effect of Cholera, or that it subjects the bowels to be more readily acted upon by the poison. To be brief, I should consider that if I shut up the bowels and prevented all loose evacuations, that I turned the key upon the disease. I should therefore labour, if possible, to produce rather a confined state of the bowels than otherwise. I should also, in the way of diet, confine myself to a concentrated form of food; namely, that which contained most nourishment in the smallest compass, by which the necessity of too large a quantity of food would be avoided, and the bowels therefore not so subject to accumulation and frequent evacuations. I should take occasionally, if any symptoms of flatulence appeared, a teaspoonful or more of brandy, with a few drops of laudanum in it, alcohol being a ready means of stopping the fermentative process. Besides these means of precaution, I should, in cases where death occurred in a house from Cholera, use means to neutralise the poison by fumigation, &c., such as I have before described; and in addition, I should diffuse the vapour of mercury in the apartments, by throwing occasionally from ten to fifteen grains of red sulphuret of mercury upon red-hot iron.*

In every case where a person had been officiating in attendance upon any one who died of Cholera, and who felt any symptom of being unwell, I should strongly urge him to take from ten to twenty grains of calomel, with from one grain to one grain and a half, or even two grains of opium, as by this means he would, in all probability, anticipate the action of the disease should the poison be lurking within him; and, in such cases, to ensure safety is everything. Several cases have occurred within my own knowledge in which, had this course been adopted, I strongly believe

* I should not wait until some one complained with symptoms of the disease, but I should put these means into active operation immediately to disinfect the places and persons.

several lives would have been saved, but waiting until the disease is decidedly developed throws away the time for action.

Having strong faith in the antiseptic powers of kreosote, I should recommend every person to carry a small bottle in his pocket, and take one or two drops on a lump of sugar, and place it in his mouth as a lozenge, letting it slowly dissolve; or he may drop two drops into about a teaspoonful of brandy, and take that occasionally; if the bowels have any tendency to looseness he may add five, ten, or twenty drops of laudanum to it, or more.

As soon as Cholera appeared in London, I caused to be prepared some medicine for gratuitous distribution in a neighbourhood surrounding which Cholera prevailed very extensively in 1832 and 1833. This medicine has been given to a large number of persons, some with symptoms highly threatening. In that locality it has acquired a reputation, and is frequently applied for.

℞ Ol. Menth. Pip., ℥j.
Ol. Cassia, ℥j.
Kreosote, ℥j āā ℥ij.
Spt. Vin. Rect., ℥v.
Tinct. Opii., ℥j.
Spt. Ammon. Arom., ℥iv.
Misce et adde Mucilage Acacia, ℥x.
Aq. Distillat., ℥xxiv.

This makes a quart imperial measure, and of this from half an ounce to two or three ounces may be taken, and repeated according to the urgency of the case. In case of infants, one, two, or three teaspoonfuls should be given.

Should any symptom arise more threatening, such as more violent diarrhœa, attended with vomiting and any nervous agitation, I should then give twenty grains of calomel with one or two grains of opium; and in two hours give another dose of five or ten grains of calomel with opium, according to the urgency of the case, repeating it if the symptoms were still threatening; and, indeed, I should proceed to get the system under the influence of mercury as quickly as possible, believing *that then, and then only*, could the patient be considered safe. Inhaling the fumes produced by throwing half a drachm of the red sulphuret of mercury upon red-hot iron,

is said to produce salivation more quickly than when mercury is taken internally. You should remember that in this disease (Cholera) you are running the race with an enemy who gives no time—who, if you wait, will overtake you. It is a contest as to who shall affect the system first—you, by the power of mercury, or Cholera with its subtle, rapid, and overwhelming poison.*

The testimonies from our Indian possessions in favour of blood-letting are so strong, that I should have recourse to it upon the principle that it will facilitate the action of mercury.

To those medical men who have not the same faith and confidence in the power of calomel as I have, I would suggest a trial of the following agents, each of which, by its effect of coagulating albumen, I should expect to be beneficial in the early but threatening stage when there is rice-water evacuations :—Alum dissolved in water ; kreosote in pyroligneous acid ; nitrate of silver in the proportion of one grain to the ounce ; perchloride of mercury in doses of half a grain, dissolved in four to six ounces of water. These may be combined with laudanum in twenty to forty or sixty drops for a dose.† The effect of the nitrate of silver in coagulating albumen, and changing the appearance of diseased surfaces in external sores, to a healthy appearance, would lead me to expect much from it. But it must be borne in mind, that in simple diarrhœa, opiates with essential oils and kreosote will cure the majority of cases ; but when the diarrhœa resists these means, I should try either the perchloride of mercury, or nitrate of silver ; and should the symptoms still continue and cause alarm, I should affect the mouth as speedily as possible with mercury, and probably this could be done more readily with the corrosive sublimate or perchloride of mercury than with calomel. It would have this advantage, that in solution it would apply itself to the whole interior surface of the intestines ; and if, as I con-

* I am impatient when I read of small doses of calomel recommended in threatening cases of Cholera. It is like telling a person to be careful and take time when cutting through the rope that is strangling a suicide.

† This quantity need not be all drank at once, but at frequent intervals.

jecture, there is a primary effect produced upon the mucous lining of the intestines, it might arrest this primary disease, and prevent further effects; and although as regards the local effects upon the mucous lining of the intestines, it would be perhaps inferior to nitrate of silver, yet as it would, if absorbed, be producing its antiseptic effect upon the blood, it would be more to be depended upon.*

In spite of all our endeavours to prevent it, should the stage of collapse take place, I advise the operation of transfusion or saline injections into the veins, as suggested and practised by Dr. Stevens on the first invasion of Cholera in 1832 and 1833, not with the view of curing the complaint by that means, as, however it might produce the astonishing effect of apparently reanimating and restoring the stagnant circulation, was almost always, I believe, followed by a relapse into the state of collapse. My purpose in recommending it would be, that as it restored the circulation, it afforded time and opportunity to throw in the mercury, which might purify the infected blood, and perhaps permanently cure the disease. This remains of course to be tried, but in these hopeless cases, every expedient that affords a hope and a prospect should be had recourse to.

The above are the means and remedies I should recommend with most confidence.

In this short Treatise I have endeavoured to include as many practical hints as I thought might be useful, without much regard to order or arrangement. I have written it in time snatched from other occupations. I am impressed strongly with the value of the principle I have suggested, that to antiseptics we must look for the curative means of

* These remarks are to be considered in the light of suggestions to trials in cases not so immediately threatening, but the testimonies in favour of mercury are so strong that I should not be justified in losing time in their use in urgent cases.

The beneficial effects of emetics in the earliest stage of collapse has been so strongly testified to, that I am anxious not to omit notice of them. There can be no doubt but that the action of vomiting prolongs the heart's action, and retards the progress towards stagnation in the circulation, and that it has also a strong tendency to promote reaction; and I have especially noticed that, whenever the vomiting did not subside after the attack of collapse, but was kept up, such cases did not pass into *complete* collapse, and the patients often recovered.

Cholera, and not only of Cholera, *but of all malignant fevers;* but I have still this conviction, that if we find a remedy which will arrest this disease, Cholera, with certainty, it must be *before collapse is complete.* When that stage is fully established, the Disease will be found to have triumphed, and Art must resign the contest.

KREOSOTE, A PREVENTIVE OF CHOLERA.*

Since the publication of the former edition, the following fact has come to my knowledge:

A seaman who went to Melbourne in the year 1849, on board the *J. T. Foord,* took with him, by the desire of his father, about a gallon of the antiseptic mixture, containing Kreosote, which I had prepared for gratuitous distribution in a neighbourhood surrounding which Cholera prevailed in 1832 and 1833—the father having a strong faith in its effects, from having been the chief agent in distributing it for me. The son states, that two seamen died on board from Cholera before the vessel left Plymouth—that he made known to the crew that he had got some medicine for preventing the attacks of Cholera, and was as a consequence applied to by the crew whenever they felt ill, and the good effect was universal, *and whilst the emigrants died to the extent of seven or eight per day, not one of the crew died.*

He states that he has seen seven or eight bodies thrown overboard several days together; that he was often called upon at night by his fellow-seamen when ill, to whom he gave the medicine, and to save himself from being called up, he left it out for them to help themselves. The father of this young man, learning by the public papers the great mortality prevailing on board this ship, wrote to the owners or agents at Liverpool, and the following is a copy of the answer received by him:

"Liverpool, April 8th, 1850.

"Sir,—In accordance with our promise to acquaint you on receiving any news from the *James T. Foord,* we beg to say we have got a letter to-day, and are happy to relieve you by informing you your son *is not* amongst the deaths. *They are all emigrants who have died, and no sailors at all.* You will in all probability have a letter by the same mail.

"We remain, yours respectfully,

"Halhead, Fletcher, and Co."

The young man has since returned from Melbourne, and I have received from him the above facts, with the addition that he went up to the diggings, and while there dysentery prevailed very extensively, and he found the same beneficial effects from the mixture.

* For the recipe see page 29.